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TALE surface detector array and TALE hybrid system

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The Telescope Array Low-energy Extension (TALE) experiment is a hybrid air shower detector for observation of air showers produced by very high energy cosmic rays above $10^{16.5}$ eV. TALE is located at the north part of the Telescope Array (TA) experiment site in the western desert of Utah, USA. TALE has a surface detector (SD) array made up of 103 scintillation counters, including 40 with 400 m spacing, 36 with 600 m spacing and 27 with 1.2 km spacing, and a Fluorescence Detector (FD) station consisting of ten FD telescopes located at the Telescope Array Middle Drum FD station, which is made up of 14 telescopes. TALE-FD has been operational since 2013. The deployment and construction of the 103 SDs was completed in 2018, and to date about 80% of the array is in operation with a full triggering and DAQ system. Moreover, the hybrid triggering system will be implemented in September 2018. Here we report an overview of the experiment, its capabilities and the technical details of the TALE SD array and the hybrid operations.

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